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2 SHEETS

COMPLETE SPECIFICATION

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SHEETS 1 & 2

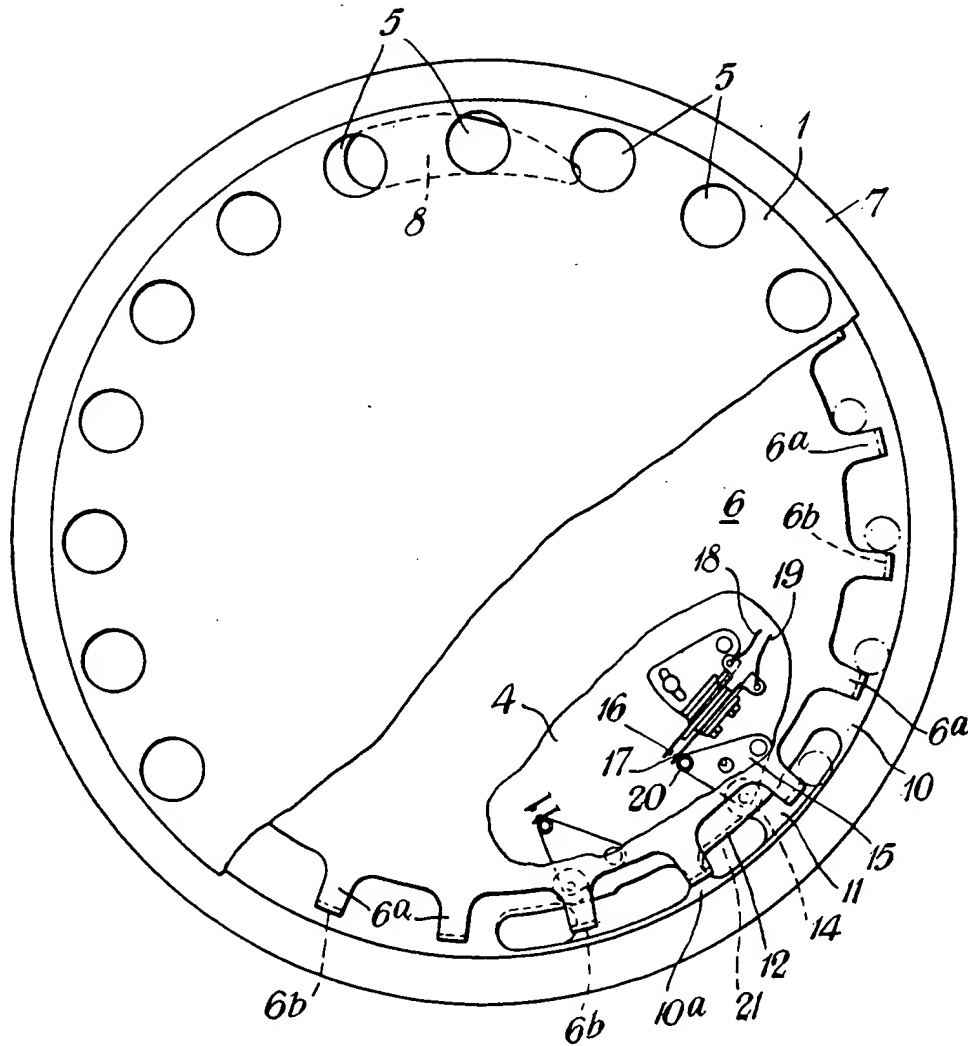


FIG. 2.

153
1/12

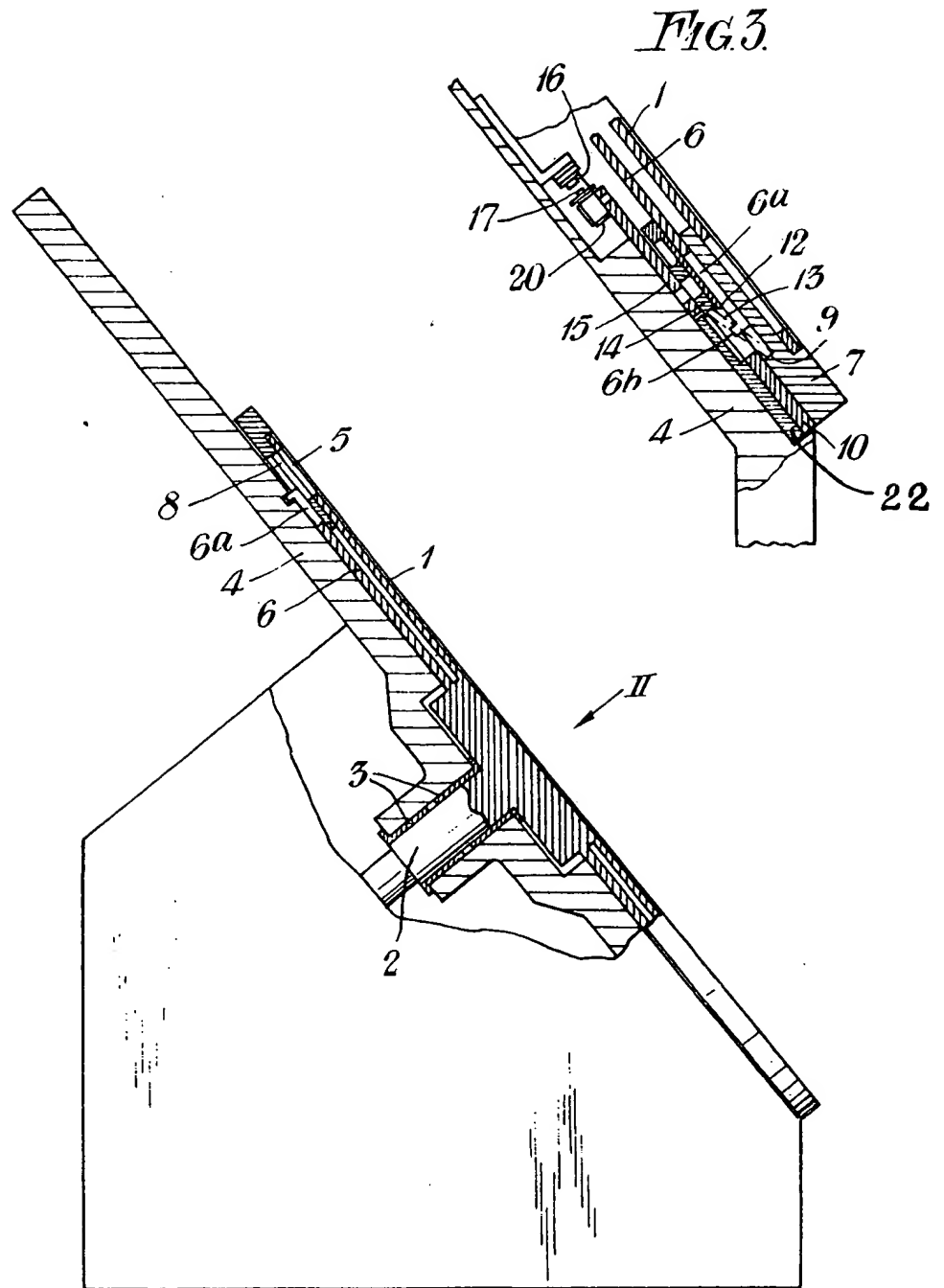


FIG. 1.

PATENT SPECIFICATION DIV. 706,981

Inventor:—ALAN HENRY MELLER.



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COMPLETE SPECIFICATION.

Apparatus for Separating and Counting Coins and the like.

We, THE INTERNATIONAL COIN COUNTING MACHINE COMPANY LIMITED, a British Company, of Alexandra Road, Enfield, Middlesex, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:

This invention is concerned with apparatus for separating and counting coins or similar disc-like articles of dissimilar size.

It is not uncommon that coinages comprise coins of similar size but of different value; the separation and counting of such coins is the primary purpose of the present invention, though it can be applied to the separation and counting of coins quite dissimilar in size or of other disc-like articles.

In the use of apparatus according to the invention the coins or other disc-like articles (hereinafter referred to as coins) are caused to take up a predetermined radial position against the rim of a fixed inclined circular plate, are sized by permitting their inner edges to fall through one or other of a number of sized apertured plates and are driven at an incline to the fixed plate past counting mechanism associated with each aperture plate by a suitably toothed wheel.

Apparatus according to the invention comprises a driven rotary disc inclined to the horizontal and provided with apertures for picking up and driving coins contained in a hopper above the disc, a parallel fixed annular disc or dividing plate fitted closely below the rotary disc, a separately toothed wheel, fixed closely below the dividing plate to the driving shaft of the rotary disc, a plurality of plates with differently sized apertures arranged to admit the inner edge and support the outer edge of a coin, and counting mechanism adjacent to and associated with each plate, an aperture being provided in the dividing plate to transfer coins

picked up by the rotary disc to pockets between the teeth of the toothed wheel, and the dividing plate being provided with an inwardly facing circumferential rim to locate the coins in a predetermined radial position as they are driven past the counting mechanism by the toothed wheel at an angle to the plane of the wheel.

The preferred counting mechanism is of the electrically operated type and the expression "counting mechanism" is intended to include a contact system for such types of mechanism.

From another aspect the invention provides apparatus for separating and counting coins of the kind in which coins to be counted are picked up by a rotary disc from a hopper characterized by the provision of a toothed wheel to which the coins are transferred and by which they are driven in predetermined radial position past the operating means of electrical counting mechanism and by the provision of at least one plate having an aperture permitting the inner edges of coins of predetermined size to fall whereby the coins are caused to pass to fall whereby the coins are caused to pass the operating means while at an angle to the plane of the toothed wheel.

A chute may be provided in association with each apertured plate, down which the separated and counted coins may be delivered.

The above and other parts of the invention are embodied in a preferred form of apparatus which will now be described in some detail by way of example with reference to the accompanying drawings in which:—

Fig. 1 is a side elevation, partly drawn as a central vertical section.

Fig. 2 is a front view, partly cut away, in the direction of the arrow II of Fig. 1.

Fig. 3 is a detailed fragmentary section of a trap plate and counter mechanism shown in Fig. 2.

The base of a hopper for coins of two or more sizes is constituted by an inclined rotary disc 1 the driving shaft 2 of which is carried in bearings 3 in a circular base plate 4.

The disc is provided with a number (say 20) of circular apertures 5 which will pick up coins from the hopper and drive them round.

Keyed to the driving shaft of the disc is a toothed wheel 6, and the wheel and disc are separated by an annular dividing plate 7 fixed to the base plate 4.

An aperture 8 near the upper edge of the dividing plate 7 beneath the apertures 5 in the disc 1 permits the coins to fall into pockets between the teeth 6a of the toothed wheel 6. As the toothed wheel 6 rotates its teeth assume a downward slope and the coins resting on them roll down until they abut against an inwardly facing flange 9 (Fig. 3) formed on the dividing plate 7 and in this way they are located radially.

One or more peripherally contiguous and co-planar trap plates 10 let into an annular plate 22 and having slotted apertures 11 of predetermined size are located beneath the path of the now radially located coins and the arrangement is such that the inner edges of coins of the size to be trapped by the particular plate can fall onto the plate 22 so as to cause the coins to be held at a slant beneath an outwardly directed lip 12 on the trap plate with their outer edges supported above the outer edge of the aperture 11.

At this stage a downwardly directed sprag 6b on a following tooth engages the coin 13 (Fig. 3) for the time being trapped and drives it past a grooved wheel 14 on a pivoted plate or arm 15. The arm is thus momentarily displaced against spring bias and closes a pair of contacts 16, 17 attached to the leads 18, 19 of an electrical counting device, the arm of contact 17 being abutted by a roller 20 carried by the arm 15.

An aperture 21 through the base plate just beyond the location of the grooved wheel 14 allows the counted coins to fall through into a chute for delivery as required.

Where more than one size of coin is to be separated and counted, trap plates, such as indicated at 10a for the coins of larger sizes are located in order of size beyond that for the smallest size in the direction of rotation of the disc and toothed wheel. Each trap plate has an associated contact operator and delivery chute.

It will be understood that coins of the larger size will pass untrapped over the earlier trap plates thus by-passing their associated counting mechanism and will only

be delivered through the trap of the size selected for them.

It is to be understood that the invention is not restricted to the exact details shown and described but embraces such modifications as come within the ambit of the accompanying claims.

What we claim is:—

1. Apparatus for separating and counting coins comprising a driven rotary disc inclined to the horizontal and provided with apertures for picking up and driving coins contained in a hopper above the disc, a parallel fixed annular disc or dividing plate fitted closely below the rotary disc, a separate toothed wheel, fixed closely below the dividing plate to the driving shaft of the rotary disc, a plurality of plates with differently sized apertures arranged to admit the inner edge and support the outer edge of a coin, and counting mechanism adjacent to and associated with each plate, an aperture being provided in the dividing plate to transfer coins picked up by the rotary disc to pockets between the teeth of the toothed wheel, and the dividing plate being provided with an inwardly facing circumferential rim to locate the coins in a predetermined radial position as they are driven past the counting mechanism by the toothed wheel at an angle to the plane of the wheel.

2. Apparatus for separating and counting coins of the kind in which coins to be counted are picked up by a rotary disc from a hopper characterized by the provision of a toothed wheel to which the coins are transferred and by which they are driven in predetermined radial position past the operating means of electrical counting mechanism and by the provision of at least one plate having an aperture permitting the inner edges of coins of predetermined size to fall whereby the coins are caused to pass the operating means while at an angle to the plane of the toothed wheel.

3. Apparatus according to Claim 2 in which a lip formed on the plate retains the coins at the desired angle.

4. Apparatus according to Claim 2 or Claim 3 in which the teeth of the toothed wheel are provided with downwardly projecting sprags which contact the coins as they are driven past the counting mechanism.

5. Apparatus for separating and counting coins constructed and arranged substantially as described herein and shown on the accompanying drawings.

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PROVISIONAL SPECIFICATION.

Apparatus for Separating and Counting Coins and the like.

We, THE INTERNATIONAL COIN COUNTING MACHINE COMPANY LIMITED, a British Company, of Alexandra Road, Enfield, Middlesex, do hereby declare this invention to be described in the following statement:

This invention is concerned with apparatus for separating and counting coins or similar articles.

It is not uncommon that coinages comprise coins of similar size but of different value; the separation and counting of such coins is the primary purpose of the present invention, though it can be applied to the separation and counting of coins quite dissimilar in size or of analogous articles.

According to the invention the coins or like articles (hereinafter referred to as coins) are caused to take up a predetermined radial position against the rim of a fixed inclined circular plate, are sized by permitting their inner edges to fall through one or other of a number of sized apertured plates and are driven at an incline to the fixed plate past counting mechanism associated with each apertured plate by a suitably toothed wheel.

Apparatus according to the invention comprises a driven, rotary disc inclined to the horizontal and provided with apertures for picking up and driving coins contained in a hopper above the disc, a parallel fixed annular disc or dividing plate fitted closely below the rotary disc, a toothed wheel, keyed closely below the dividing plate to the driving shaft of the rotary disc, a plurality of plates with differently sized apertures arranged to admit the inner edge of a coin and counting mechanism associated with each plate, an aperture being provided in the dividing plate to transfer coins picked up by the rotary disc to pockets between the teeth of the toothed wheel, and the dividing plate being provided with an inwardly facing circumferential rim to locate the coins in a predetermined radial position as they are driven past the counting mechanism by the toothed wheel at an angle to the plane of the wheel.

The preferred counting mechanism is of the electrically operated type and the expression "counting mechanism" used above is intended to include a contact system for such types of mechanism.

From another aspect the invention provides coin counting mechanism of the kind in which coins to be counted are picked up by a rotary disc from a hopper characterized by the provision of a toothed wheel to which the coins are transferred and by which they

are driven in predetermined radial position past the operating means of electrical counting mechanism and by the provision of at least one plate having an aperture permitting the inner edges of coins of predetermined size to fall whereby the coins are caused to pass the operating means while at an angle to the plane of the toothed wheel.

A chute may be provided in association with each apertured plate, down which the separated and counted coins may be delivered.

The above and other parts of the invention are embodied in a preferred form of apparatus which will now be described in some detail by way of example.

The base of a hopper for coins of two or more sizes is constituted by an inclined rotary disc the driving shaft of which is carried in bearings in a circular base plate.

The disc is provided with a number (say 20) of circular apertures which will pick up coins from the hopper and drive them round.

Keyed to the driving shaft of the disc is a toothed wheel, and the wheel and disc are separated by an annular dividing plate fixed to the base plate.

An aperture near the upper edge of the dividing plate beneath the apertures in the disc permits the coins to fall into pockets between the teeth of the toothed wheel. As the toothed wheel rotates its teeth assume a downward slope and the coins resting on them roll down until they abut against an inwardly facing flange formed on the dividing plate and in this way they are located radially.

One or more trap plates having slotted apertures of predetermined size are located beneath the path of the now radially located coins and the arrangement is such that the inner edges of coins of the size to be trapped by the particular plate can fall so as to cause the coins to be held at a slant beneath an outwardly directed lip on the trap plate with their outer edges supported above the outer edge of the aperture.

At this stage a downwardly directed sprag on a following tooth engages the coin for the time being trapped and drives it past a formed wheel on a pivoted plate or arm. The arm is thus momentarily displaced against spring bias and closes a pair of contacts attached to the leads of an electrical counting device.

An aperture through the base plate just beyond the location of the formed wheel

allows the counted coins to fall through into a chute for delivery as required.

5 Where more than one size of coin is to be separated and counted, trap plates for the coins of larger sizes are located in order of size beyond that for the smallest size in the direction of rotation of the disc and toothed wheel. Each trap plate has an associated contact operator and delivery chute.

10 It will be understood that coins of the larger size will pass untrapped over the earlier trap plates thus by-passing their associated counting mechanism and will

only be delivered through the trap of the size selected for them.

It is to be understood that the invention is not restricted to the exact details shown and described but embraces such modifications as come within the ambit of the accompanying claims.

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